lated across one or more steps of the machine program cycle using the virtual heat dissipation corresponding to the mechanical energy of at least one idling drive axle.

[0022] By calculating the mechanical energy and the corresponding heat dissipation, it is easy for the control unit to calculate what the energy intake looks like at least for the drive axle when converting mechanical and thermal energy.

[0023] Increased radial forces occur in particular when process parameters are not properly configured. These result in particular from an unfavorable ratio of the RPM and/or feed speed of the tool or tool holder to the material volume of the workpiece ablated. RPM and feed speed can be measured and configured on the machine at any time.

[0024] On known tool machines, the material volume of the workpiece ablated is not generally calculated. In such case, it proves advantageous during further development of the process for the time-dependent, virtual energy intake of workpiece processing to comprise time-dependent, virtual material ablation of the workpiece across one or more steps of the machine program cycle multiplied by the virtual energy intake required for this per volume of workpiece ablated.

[0025] The energy required for the material ablation is proportional to the volume ablated. In developing the process further, therefore, it is intended that it be possible to save and adjust virtual material ablation and the virtual energy intake required for this per volume of the workpiece ablated in a storage medium of the control unit, and that it be possible to retrieve such for calculating virtual total energy intake.

[0026] In such case, the volume ablated and the energy intake required for this per volume ablated can be saved in the storage medium and estimated using the control unit.

[0027] Furthermore, in developing the latter inventive concept further, it is intended that it be possible to configure and individually adjust the material ablations saved in the storage medium or control unit and the virtual energy intake required for this per volume ablated. The prediction can thus be improved from one machine program cycle to the next.

[0028] Furthermore, in developing the process further it is intended that the time-dependent, virtual energy intake of workpiece processing additionally comprise multiplication by a material variable or material constant of the workpiece.

[0029] This can further improve the result of the total virtual energy intake calculated. The material constants allow linear relations to be depicted easily. The material variables allow even complex relations to be reproduced.

[0030] The result can be further improved if the calculation by the control unit of the radial forces acting on the tool holder, calculated as at least the difference between time-dependent, real total energy intake and time-dependent, virtual total energy intake, additionally includes calibration using a machine-specific calibration factor or a calibration function.

[0031] The calibration factor allows linear relations to be depicted easily. The calibration function allows even complex relations to be reproduced.

[0032] In such case, the process defined by the invention, that is generally applicable to tool machines, can be individually optimized for each individual tool machine.

[0033] It proves advantageous for the recording of at least the body data, room data, and operating data by a sensor in the control unit to include manual archiving in the control unit, in particular in the control unit's storage medium, and/or automatic archiving from the machine program.

[0034] If recording of at least body data, room data, and operating data is performed by at least one sensor, the process can be fully automated. If the recording of at least body data, room data, and operating data includes manual archiving in the control unit, there is no need for an additional sensor. If the recording of at least body data, room data, and operating data includes automatic archiving from the machine program, the process can be set up and performed on the tool machine quickly.

[0035] So as to be able to calculate the total virtual energy intake better, it is intended during further development of the process to approximate the geometry of the recorded body data of the tool and/or tool holder using virtual auxiliary geometry from a number of N auxiliary elements and/or to approximate the geometry of the workpiece using a scatter plot in a Cartesian coordinate system, the individual points of which are spaced at regular intervals from one another and which form, in particular, a regular or irregular matrix.

[0036] Using a regular matrix makes subsequent data processing easier. It is furthermore conceivable that the individual points will form an irregular matrix. In such case, it is possible to refine the process in order to make it possible, in particular, to take into account the stochastic material properties.

[0037] This allows the real geometry of the body data to be easily transferred from the tool, tool holder and workpiece to a virtual environment.

[0038] The auxiliary elements, for example, can be approximated using spheres in order to be able to utilize performant algorithms, which allows the intersection between the simplified tool geometries and the workpiece geometries to be calculated.

[0039] The distance between the points of the virtual scatter plot of the workpiece depicted in such a way represents the smallest possible unit volume of the workpiece that can be removed by the tool during processing of the workpiece by means of material ablation. In developing the latter process further, it is intended that the time interval between recording body data, room data, and operating data will be equal to or smaller than the distance between two points of the geometry of the workpiece approximated as a virtual scatter plot divided by the feed speed of the tool and/or tool holder, and/or that the time interval will comprise the timespan of one step of the virtual simulation of the machine program.

[0040] This allows a time interval and timespan of one step of the virtual simulation of the machine program to be defined in an easy manner, whereby the process will produce optimal results. In such case, the process steps named individually at the outset, in particular steps a. to e., can be repeated at these time intervals.

[0041] In order to keep the virtual environment up-to-date when calculating the virtual simulation of the machine program, it proves advantageous for the time-dependent, virtual material ablation of the workpiece, in the virtual simulation, to comprise all such points of the workpiece's virtual scatter plot which overlap during the timespan with the auxiliary elements which make up the virtual auxiliary geometry of the tool, and for the virtual geometry of the workpiece to be adjusted by removing those points of the virtual scatter plot which overlap with the auxiliary elements of the tool.